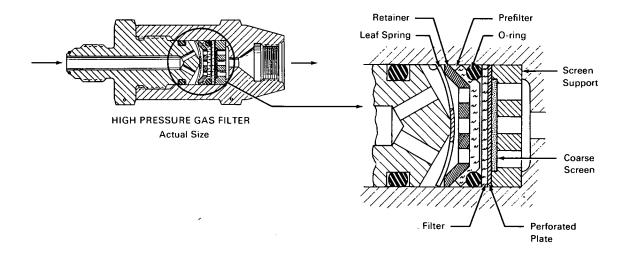
NASA TECH BRIEF



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Filter for High-Pressure Gases Has Easy Take-Down, Assembly



The problem: To design a simple high-pressure filter that can be placed in tubing supplying sterilization gases and yet be easy to assemble and disassemble.

The solution: A metal filter body, about 2 inches long and 1 inch in diameter, is constructed so that the inlet end can be unscrewed. Inside there is a filter strongly supported on both sides and sealed by an O-ring. The design is such that all eight parts of the filter element can be taken out and easily reassembled.

How it's done: The inner end of the inlet fitting has a cone that presses against a leaf spring to keep the eight filter parts tightly in place. Other parts are, in order: a retainer with a conical shaped outer edge, a

deformable prefilter sheet, O-ring, filter, perforated plate, coarse screen, and screen support. Inclusion of the cone on the inlet fitting and of the leaf spring supplies axial pressure for sealing, yet applies only a minimum of torque to turn or distort the filter elements.

Gases are tightly sealed because the outer, conical edge of the retainer pushes against the deformable pre-filter, which in turn forces an oversized O-ring against the filter. The filter is supported from the back by the screen, the perforated plate, and the screen support. Sealing with an O-ring not only offers the advantage of simplicity but, in this design, permits the use of a small-diameter filter body with good resistance to the stresses induced by the high-pressure gases.

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Note:

This filter is intended for high-pressure sterilization gas supply systems up to 12,000 psi but can be applied to similar high-pressure systems requiring a filter that can be readily taken apart.

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Source: William F. MacGlashan Jet Propulsion Laboratory (JPL-373)